

## **SIV ENTRY INTO T FOLLICULAR HELPER (TFH) CELLS MAY BE ASSOCIATED WITH CCR5+ PRE-TFH CELLS IN LYMPH NODE (LN)**

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**Introduction:** Tfh cells are subset of memory CD4+ T cells found exclusively within the germinal centers. They are important for adaptive antibody responses and B cell memory. Tfh cells express limited levels of CCR5, yet were infected at high levels with the virus. Clonal sequencing of env gp120 suggested that the virus used CCR5 to enter Tfh cells. We hypothesized that CCR5 expressing pre-Tfh cells were infected, survive and differentiate into Tfh cells.

**Methods:** Single cell suspensions were prepared from pigtail macaque LN. Flow cytometric cell sorting, quantitative real-time PCR and multiplex PCR were principle methodologies for cell subset characterization.

**Results:** LN PD-1<sup>med</sup> cells are enriched for Tfh precursors, 33.4% of which expressed bcl6 mRNA (n=6); 3.4% of which expressed detectable Bcl6 protein (n=7). On TCR stimulation with IL-21, 15.8% of these cells upregulated PD-1 and Bcl6 to levels equivalent to ex vivo PD-1<sup>hi</sup> cells (n=8). 23.9% of PD-1<sup>med</sup> cells expressed CCR5 (n=9). Characterization of CCR5- and CCR5+ PD-1<sup>med</sup> cells revealed that majority of Tfh precursors are present in CCR5- subset. Per-cell CCR5 levels were significantly lower, whilst CCR5+PD-1<sup>hi</sup> cell frequencies were significantly higher in SIV+ samples (p<0.05, n=11). SIV-gag DNA was present in ex vivo PD-1<sup>hi</sup> and PD-1<sup>med</sup> cells regardless of CCR5 expression, as well as in PD-1<sup>hi</sup> cells derived from PD-1<sup>med</sup> population (n=3).

**Conclusion:** CCR5 is an important mediator in establishing the Tfh viral reservoir. Blocking CCR5 on LN cells could help to prevent future infections and improve immune responses to vaccinations.

**Disclosure of Interest Statement:** The authors have no conflict of interest to disclose.

## PHARMACOLOGICAL ABLATION OF CELLULAR INHIBITORS OF APOPTOSIS (CIAPS) RAPIDLY SENSITIZES HIV-INFECTED CD4+ T CELLS TO DEATH, IMPEDING VIRAL SPREAD AND THE DELAYED ATTRITION OF CD4+ T CELLS IN HUMANIZED MICE

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**Background:** Inhibitor of Apoptosis (IAP) molecules are endogenous pro-survival proteins, which confer resistance to inflammatory molecules that promote cell death, such as Tumour Necrosis Factor (TNF) and TNF-Related Apoptosis-Inducing Ligand (TRAIL). IAP down-regulation thereby enhances cellular susceptibility to apoptosis upon exposure to such stimuli. Modulating IAP expression during chronic infection is a novel strategy to eliminate infected cells. This is pertinent given the inflammatory milieu generated during infections, such as HIV, where infected cells are more likely exposed to potential death signals.

**Methods:** To investigate this, we treated HIV-infected primary human CD4+ T cells in vitro with a Second Mitochondria-derived Activator of Caspases (SMAC)-mimetic, birinapant, which selectively induces the degradation of cellular IAPs, cIAP1 and cIAP2. These experiments were complemented with in vivo birinapant treatment of HIV-infected humanised (CD34+ human hematopoietic-reconstituted NOD.SCID.IL2 $\gamma$ null) mice. Plasma and cellular viral titres were assessed by qPCR, and ex vivo viral outgrowth assays were used to measure latency.

**Results:** Birinapant induced the rapid and preferential killing of infected over uninfected CD4+ T cells, and a concomitant reduction in infectious virus. This heightened sensitivity is most likely due to amplified TNF signaling, as we observed enhanced TNF receptor expression on HIV-infected CD4+ T cells. We found that treating humanised mice with birinapant one week after HIV infection reduces viral loads and prevents the widespread attrition of CD4+ T cells. We hypothesise this is achieved by the rapid apoptosis of infected cells early after treatment, thereby limiting viral spread and disease progression.

**Conclusion:** This is the first time that modulating IAP expression has been shown to be effective for the selective killing of HIV-infected cells. Our humanized mice data affirms the utility of this approach in vivo, warranting further investigation into the ability of cIAP inhibition to sensitize all HIV-infected cells, particularly the latent reservoir, to apoptosis.

## MALE SEX WORKERS AND RELATIONSHIPS WITH THEIR CLIENTS IN AUSTRALIA

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**Background:** Trust, familiarity, and previous sexual contact between sex partners have been associated with increased likelihood to engage in condomless anal intercourse (CLAI) among gay men. Does prior acquaintance between male sex workers (MSW) and their male clients similarly affect their likelihood to engage in CLAI?

**Methods:** A cross-sectional survey of MSW was conducted in 2013-4 using anonymous, self-complete questionnaires with recruitment through gay community websites. 117 men who had engaged in sex work in the previous year reported their sexual behaviour and extent of prior knowledge of their most recent male client.

**Results:** One third (34.2%) of MSW reported having engaged in CLAI with their most recent client. Neither having had previous contact with that client nor the method of meeting that client was associated with engaging in CLAI with him. Frequency of sex work was not associated with having engaged in CLAI. 51.3% indicated that their last client had disclosed his HIV status, with 48.7% indicating that he was HIV-negative. MSW who reported that their last client was HIV-negative were more likely to report CLAI with him as were those whose last client had neither disclosed his HIV status or had informed him that he was HIV-positive (OR=3.25; 95%CI=1.46-7.28; p=0.003). Among the 88 MSW who reported having tested HIV-negative, 46.9% of the 49 men whose last client was also HIV-negative engaged in CLAI with him whereas only 10.3% of the 39 men whose last client was not 'known' to be HIV-negative had engaged in CLAI (p<0.001).

**Conclusion:** How and when MSW had met their most recent client was not a factor in their decision to engage in CLAI on that occasion. MSW who had been informed that this client was HIV-negative were more likely to engage in CLAI.

**Disclosure of Interest Statement:** The Kirby Institute and the Australian Research Centre in Sex, Health and Society (ARCSHS) receive funding from the Australian Government Department of Health and Ageing. The Kirby Institute is affiliated with the Faculty of Medicine, University of New South Wales. ARCSHS is affiliated with La Trobe University. SWOP receives funding from NSW Health. No pharmaceutical grants were received in the development of this study.

# IS ACCULTURATION A MAJOR FACTOR FOR HIV RELATED RISK TAKING BEHAVIOURS AMONG SOUTH ASIAN IMMIGRANT MEN-WHO-HAVE-SEX-WITH-MEN IN AUSTRALIA?

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**Background:** Men-who-have-sex-with-men from South-Asian countries currently living in Australia (SAMSM) have been exposed to conservative cultural-religious beliefs and lived as a persecuted minority in their own countries. Whilst Australia may offer them opportunities to be more comfortable with same-sex intimate behaviours, barriers towards psychological wellbeing still remain unchanged. Poor psychological wellbeing may contribute to high-risk sexual behaviours. Research examining the acculturation process and its impact on sexual risk-taking behaviours is limited. Studies have identified strong association between acculturation and sexual risk-taking behaviours. This paper will report on the preliminary data on the effects of acculturation on HIV risk-taking behaviours among SAMSM living in Australia.

**Methods:** The study employed an online questionnaire to collect anonymous data from SAMSM living in NSW, Victoria and Queensland over four months (December 2014-March 2015). The survey-link was promoted via local LGBTIQ community newsletters/websites with a targeted snowball-approach to access this hard-to-reach community. The questionnaire included demographics, sexual-behaviours, and drug-use. Rissel's acculturation scale, validated on Arabic and Vietnamese-speaking migrants in Sydney, was used to determine individual's level of acculturation.

**Results:** In total, 144 SAMSM emigrating from five countries (Bangladesh-54; India-36; Nepal-9; Pakistan-27; Sri Lanka-18) completed the survey. Participants' mean age was 32 years (range 18 – 56 years). In previous six months, 114 (79%) participants reported sex with casual partners; 40 (35%) of them had engaged in unprotected anal intercourse. Almost three quarters (105, 73%) reported substance use (alcohol, methamphetamine and cannabis) to enhance their sexual pleasure. A statistical significant correlation [ $r(142) = .830$ ;  $p = .01$ ] was noted between acculturation and HIV related risk-taking behaviours.

**Conclusions:** This preliminary finding highlights HIV related high-risk behaviours increased as SAMSM acculturate more with Australia's multicultural society with substantial high-risk sexual and substance abuse behaviours. Further research is required to determine if targeted intervention would benefit the SAMSM communities within Australia.

# THE USE OF MOBILE PHONE APPS TO MEET PARTNERS BY GAY MEN IN AUSTRALIA IS NOT ASSOCIATED WITH INCREASED RISK-TAKING: FINDINGS FROM THE GAY COMMUNITY PERIODIC SURVEYS, 2014

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**Background:** Recently there has been a dramatic increase among gay men in the use of mobile phone 'apps' to meet each other. We reviewed data collected in the Sydney, Melbourne, Queensland, Adelaide and Perth Gay Community Periodic Surveys (GCPS) to identify which men were using mobile and internet methods to meet each other and whether these methods were associated with different risk practices.

**Methods:** We analysed demographic markers and risk practices of participants who met their male sex partners through mobile apps only, mobile apps plus internet (but no offline methods), online plus offline methods and offline methods only. Data from 2014 was analysed to determine differences between these groups. We used multinomial logistic regression to compare men who met partners via a combination of online and offline places with men who used mobile apps only, other exclusively online methods or offline places only.

**Results:** Data from 6,321 participants were included. 4,116 (65.1%) men reported using at least one of the listed places or methods to meet sex partners. Of these 4,116 participants, 60% used a combination of online and offline methods to meet partners, 7% used mobile apps only, 10% used a combination of mobile apps and internet sites and 23% only used offline methods. Compared with men who used a combination of online plus offline methods to meet partners, men who only used mobile apps were less likely to report condomless anal intercourse with casual partners, and more likely to report fewer sexual partners.

**Conclusions:** There has been a steep increase in use of mobile apps to meet male partners by gay men in Australia. However, men who exclusively use mobile apps to meet partners do not appear to be at increased risk of STIs or HIV compared to men who use a combination of online and offline methods.

**Disclosure of interest statement:** The Centre for Social Research in Health and The Kirby Institute receive funding from the Australian Government Department of Health. The Gay Community Periodic Surveys are funded by state and territory health departments.

## **PUBLIC SEXUAL HEALTH CLINICS INCREASE ACCESS, HIV TESTING AND RE-TESTING AMONG HIGHER RISK GAY AND BISEXUAL MEN**

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**Introduction:** Most HIV diagnoses in Australia occur in gay and bisexual men (GBM), however the majority of higher-risk GBM are testing for HIV at less than recommended frequency (3-6 monthly). In recent years, public sexual health clinics (SHCs) have implemented a range of initiatives to increase access to HIV testing in GBM including express clinical models, after-hours/drop-in services, online-booking, rapid-testing, and SMS reminders. We measured HIV testing trends among GBM at New South Wales (NSW) SHCs in the time period of the initiatives.

**Methods:** We utilised routinely collected data from 33 SHCs in NSW, and calculated the following annual indicators among HIV negative GBM from 2009-2013: number attending clinics; proportion tested for HIV at least once; proportion re-tested within 1-12 months; and HIV positivity. Indicators were calculated for all GBM and higher-risk GBM (>5 partners in last 3 months or previous sexually transmissible infection diagnosis). Chi-square tests were used to assess trends over time.

**Results:** In the 5-year period, 29,623 unique HIV-negative GBM attended participating SHCs and 21% were higher-risk men. Among all HIV-negative GBM, there were significant increasing trends ( $p$ -values<0.001) in: the number of individuals attending (4,748 in 2009 to 7,387 in 2013, relative increase:56%); proportion tested (73% to 85%, relative increase:16%); and proportion re-tested within 1-12 months (42% to 52%, relative increase:24%). Among higher-risk GBM, greater increases were observed in individuals attending (934 to 1,667, relative increase:78%) and proportion re-testing (51% to 64%, relative increase:26%), but a smaller change in the proportion tested (89% to 93%, relative increase:5%), though starting from a higher base (significant increasing trends,  $p$ -values<0.001). HIV-positivity in all GBM fluctuated (1.3-1.1%) with no significant trend over time ( $p=0.790$ ).

**Conclusion:** NSW SHCs have successfully increased attendance and HIV testing among GBM, particularly in higher-risk men. HIV-positivity suggests that testing

increases have been well-targeted to higher-risk GBM. There is potential to further improve testing uptake and re-testing.

**Disclosure of Interest Statement:**

ACCESS study is funded by the NSW Ministry of Health and the Victorian Department of Health.

## **‘IT’S LIKE COOKING AN EGG’: EXPLORING GAY AND BISEXUAL MEN’S RESPONSES TO HIV SELF-TESTING**

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**Introduction:** In late 2014, Australian policy changed to support self-testing for HIV. While no such tests are commercially available, in 2013 a randomised control trial known as ‘FORTH’ was undertaken. In the context of the FORTH trial, we interviewed gay, bisexual and other men who have sex with men (GBM) to understand the experience of HIV self-testing.

**Methods:** Participants who had completed 12-months follow-up in FORTH were recruited using stratified sampling based on testing patterns and risk behaviour. In-depth interviews were undertaken with 13 GBM during March/April 2015. Transcripts were analysed using inductive thematic analysis to explore experiences of HIV self-testing and any changes in sexual practices.

**Results:** Responses are organised into three thematic categories. *Qualified control:* men highlighted the logistical and psychological control that self-testing afforded but also recognised some limits – the ‘window period’ in particular – with test results seen as an indicator of serostatus but not definitive. Some participants reported asking partners to use the tests as a preface to condomless sex, even while recognising the limits of this approach. *Routine enhancement:* all participants described self-testing as an enhancement, not replacement, for their existing HIV testing routines. For some, self-testing was an avenue to more frequent testing, while others questioned what benefits it provided beyond sexual health screening at a clinic. *Technological optimism:* for many participants, self-testing was seen as part of a tapestry of HIV-related advancements and a sign of increasing opportunities for more inclusive and self-directed HIV prevention strategies.

**Conclusion:** While the degree to which men trust self-testing seems to vary, despite being aware of its limitations some men still used self-testing to screen partners for condomless sex. Self-testing seems to have generated excitement about HIV prevention, fostered a sense of control and it has, for some, supplemented existing routines with more frequent testing.

**Disclosure of Interest Statement:** The research is funded through a NHMRC Program grant from the NHMRC and the self-test kits were purchased from Orasure. The Kirby Institute and the Centre for Social Research in Health receive funding from the Australian Government Department of Health.

# RESILIENCE AND FLOURISHING AMONG PEOPLE LIVING WITH HIV: A NATIONAL STUDY OF AUSTRALIAN GAY MEN

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**Background:** Rates of depression and anxiety can be disproportionately high among people living with HIV (PLHIV). Research in this area has tended to adopt a deficit approach, focusing on factors related to poorer mental health. However, efforts to improve the lives of PLHIV depend not only on identifying circumstances in which individuals struggle, but also circumstances in which they thrive or flourish. This study helps to address this need by examining demographic and psychosocial factors related to resilience and flourishing among Australian HIV-positive gay men.

**Methods:** A national online survey was conducted on the mental health of 357 Australian HIV-positive gay men aged 18+. Measures for resilience and flourishing included the Connor-Davidson Resilience Scale and the Flourishing Scale.

**Results:** Average levels of resilience and flourishing in the sample were similar to those in the general population. Although a range of factors such as a higher income, having close friends, and receiving social support were linked with greater resilience, a multivariable regression revealed internalised HIV stigma as the most critical factor. Specifically, those who reported high levels of internalised stigma were lower in resilience. For flourishing, having a higher income, being in a relationship, and not having experienced HIV-related discrimination were linked with flourishing. However, a multivariable regression revealed that internalised HIV stigma and receiving social support were the most critical factors. Specifically, those who were least likely to be flourishing reported high levels of internalised stigma and low social support.

**Conclusions:** Resilient outcomes and flourishing among HIV-positive gay men appear to rely heavily on reducing internalised HIV stigma. Provision of social support also appears important. A focus on stigma reduction and social support may be needed in policies and programs that help build resilience and psychological well-being among HIV-positive gay men.

**Disclosure of Interest Statement:** Nothing to declare

## MEETING TESTING TARGETS ETHICALLY

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**Introduction:** The prevalence of on-premises testing at sex industry workplaces is rising in NSW, as local health districts look to diversify ways to meet increases in testing targets as greater emphasis is placed upon HIV testing, a key arm of treatment as prevention. This presentation will detail the consultative process by which sex worker health organisation, SWOP, arrived at a position statement about on-premises testing, and guide you through some of the affected communities' key considerations. This exploration of process will assist those looking to expand their sexual health testing targets in an ethical, consultative manner.

**Methods:** SWOP performed a comprehensive survey of key stakeholders, including NSW sex workers and sexual health staff. This was conducted via one-on-one interviews at a range of locations across NSW, questionnaires - delivered both in person and online; and community forums. To ensure good coverage of CALD sex workers, study instruments were translated into key community languages, and delivered by peer interviewers.

**Results:** As well as describing the overall results of this survey, this presentation will identify differences in responses from urban and rural/regional areas, variations according to age and gender of sex workers, and expose concerns particular to CALD communities.

**Conclusion:** Keeping the affected community, NSW sex workers, central to decisions surrounding the ways in which the health sector meets increased testing targets, is crucial to both the success of ending HIV, as well as to the adoption of effective harm reduction practices. By talking to the affected community 'on the ground' in sex industry premises where the positive and negative effects of increased testing targets actually play out, SWOP was able to evolve a community-centric position paper that could help inform future testing initiatives rolled out by local health districts.

**Disclosure of Interest Statement:** SWOP is funded by NSW Health.

## **DEVELOPING SUSTAINABLE, INTERNATIONAL PARTNERSHIPS MODEL TO BUILD CAPACITY IN HIV AND STIS**

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**Introduction:** Effective public health responses in prevention and management of HIV/STIs require strong human resources, focused on the development and implementation of evidence-based policies. We wished to explore how best to leverage Australian pedagogic and research skills in HIV/STIs into an Indian setting, in order to build human resource capacity.

**Methods:** An appropriate institutional partner in India was chosen on the basis of their academic track record. Financial support was obtained from the Australian Government's aid agency. Three phases were developed:

**Phase 1:** Stakeholder consultation and survey to establish local needs, together with pedagogic skill development at the partner institution;

**Phase 2:** Curriculum mapping and development to reflect local educational priorities;

**Phase 3:** Pilot delivery, followed by regional expansion.

**Results:** The University of Sydney partnered with the Public Health Foundation of India (PHFI), due to their focus on public health education, coupled with their technical and pedagogic expertise. 27 local faculty members of PHFI and affiliated organisations were trained in Australia and an enabling environment created by reciprocal visits and close collaboration. Forty three stakeholders from 14 Indian institutions participated in the national consultation. These included academic institutions, the National AIDS Control Organisation, NGOs and prospective participants. The preference was for a 6-month course focussing on public health aspects of HIV/STIs.

To minimise costs, an e-learning site was developed using open source software and containing jointly developed content. The pilot course was delivered in 2013-2014, subsequently extended to include a regional component. A total of 53 students have successfully completed the course to date.

**Conclusion:** Clarity of purpose, careful matching of institutions and effective communication were keys to building informed partnerships. The leveraging of existing expertise, local adaptation, together with the use of open-source software has led to the development and running of a cost effective, scalable capacity-building resource.

**Disclosure of Interest Statement:** *Australian aid agency of the Department of Foreign Affairs and Trade, Australia funded the project.*

# THE MEANING OF OUTREACH WORK IN INDONESIA QUALITATIVE STUDY ON WORK MEANING AND FACTORS INFLUENCING WORK QUALITY AMONG OUTREACH WORKERS IN HIV&AIDS PREVENTION PROGRAM IN 3 CITIES IN JAVA

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**Background:** Despite abundant academic literature highlighting the importance of outreach intervention, little attention is paid to outreach workers as the main 'instrument' of this health promotion model. This study aims to understand the lived experiences of outreach work in Indonesia. It will address the ideals behind working as outreach workers, and perception on effective outreach work in HIV prevention program.

**Methods:** This qualitative study was conducted from June 2013 to March 2014 with NGOs in Yogyakarta, Solo, and Semarang. In-depth interviews were done with 25 outreach workers, 17 members of target groups and 13 organization representatives. Four outreach workers were involved as research assistants who also provided reflexive input.

**Results:** Findings show that there exist different kinds of program designs in HIV prevention agenda which involve outreach intervention. These program designs were mostly influenced by the idea of what outreach work is internationally as most NGOs are under international aid funding. Outreach workers interviewed were mostly part of the community they served. Consequently, they often had contradicting views on how to facilitate community change which differed from those of their donors. Such background can be used as a capital in designing programs that fit into the realities of target groups. However, perceptions of effective and ideal outreach worker are also influenced by the idea of professionalism and altruism from non-members of target group.

**Conclusion:** This study has highlighted the lived experiences of outreach intervention in Indonesia which are implied by the rationale and motivation of being involved in such work. There is a need to reevaluate outreach work concept used in projects where communication with target groups has often been relegated to technical definition. Of equal importance is the need to reemphasize the role of outreach workers as a middle person who masters both 'project language' and 'local language'.

## **Disclosure of Interest Statement:**

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## INHIBITING HIV-1 REVERSE TRANSCRIPTION BY DESTABILIZING THE REVERSE TRANSCRIPTION COMPLEX

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**Background:** Reverse transcription (RTion), the process which converts viral genomic RNA into a double strand DNA, is the central defining feature of HIV-1 replication and a major target for anti-retroviral therapy. At the core of the RTion process is a multi-protein complex called the reverse transcription complex composed of reverse transcriptase (RT), viral proteins including IN, CA, and Vpr and cellular proteins including eukaryotic translation elongation factor 1A (eEF1A). We previously showed that eEF1A stabilized the RTC in cells and was important for late steps of reverse transcription. Our experiments show that proteins interacting with the RTC via RT can inhibit reverse transcription by affecting viral uncoating kinetics and RTC stability.

**Methods:** Biolayer Interferometry, co-expression in cells in vitro, analysis of viral RTCs, in vitro uncoating assay, cell infection studies.

**Results:** Our recent experiments show a direct interaction between RT and eEF1A that can be down regulated by amino acid substitutions in the RT thumb domain, and which lead to downregulated late reverse transcription. Moreover we show that drugs which bind to eEF1A are potent inhibitors of reverse transcription. Experiments to determine if eEF1A binding drugs negatively affect the RTC in cells will be presented. Recently we also showed that a Tat mutant called Nullbasic inhibits reverse transcription. Our recent data shows that Nullbasic is an RT binding protein that is found in viral particles. In vitro uncoating assays show that virions containing Nullbasic undergo accelerated uncoating kinetics, and analysis of cells infected with HIV-1 containing Nullbasic indicates that the levels of RTCs are reduced, consistent with the uncoating defect. We have recently made Jurkat cell line expressing Nullbasic which appear to be highly resistant to HIV-1 infection. In chronically infected Jurkat cells, introduction of Nullbasic can decrease HIV-1 mRNA levels from 150-to 800 fold. The mechanisms responsible for strong inhibition of HIV-1 will be presented.

**Conclusion:** The combined evidence indicates investigations of interaction between RT and viral and cellular proteins could enable new antiviral strategies.

**Disclosure of interest:** This research was supported by the Australian Research Council and the National Health and Medical Research Council.

## NOVEL HIV INHIBITORS DEVELOPED AGAINST VIRAL PROTEIN NUCLEAR TRANSPORT

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**Introduction:** Specific viral proteins enter the nucleus of infected cells in order to perform essential functions, as part of the viral lifecycle. The integrase (IN) and Rev proteins of human immunodeficiency virus (HIV)-1 are of particular interest in this context, due to their integral role in integrating the HIV genome into that of the infected host cell and in exporting the unprocessed viral RNA to the cytoplasm respectively. Current IN-based anti-viral compounds target the IN/DNA interaction, but since IN must first enter the nucleus before it can perform these critical functions, nuclear transport is an attractive target for therapeutic intervention.

**Methods:** We developed a novel high-throughput screening assay for identifying inhibitors of nuclear import, based on amplified luminescent proximity homogeneous assay (ALPHA Screen) technology, which is high-throughput, requires low amounts of material, and is efficient and cost-effective.

**Results:** We used the assay to screen for specific inhibitors of the interaction between IN or Rev and their nuclear transport receptors, importin  $\alpha/\beta$  or  $\beta$  respectively successfully identifying several specific inhibitors of the interactions. Importantly, we demonstrate that the identified compounds are effective in specifically preventing active nuclear transport of IN in transfected cells, without affecting general cellular nuclear import. Both Rev specific and general inhibitors of Imp  $\beta$  nuclear transport were identified in the Rev screen. We validate the activity and specificity of these compounds in inhibiting nuclear protein import in living cells. Finally we demonstrate that both lead compounds display potent anti-viral activity, highlighting the utility of the screening approach and validating nuclear import as a therapeutic target.

**Conclusion:** Our novel, considered screening approach is able to identify specific inhibitors of the interaction between HIV-1 proteins and nuclear import receptors, which serve as lead compounds for a new class of potent anti-viral therapeutics

**Disclosure of Interest Statement:** No Disclosure of Interest.

# THE LIVED EXPERIENCE OF LONG-TERM SURVIVORS AGEING WITH HIV IN REGIONAL QUEENSLAND: PRELIMINARY FINDINGS OF A LONGITUDINAL QUALITATIVE STUDY

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**Introduction:** The early years of the epidemic left a legacy of ongoing psycho-social challenges, which are becoming more complex as people living with HIV (PLHIV) age and multiple co-morbidities emerge. Longitudinal qualitative research is good at documenting and giving voice to the lived experience of PLHIV but this kind of evidence is rare. This paper presents preliminary findings of such an ongoing study. An in-depth understanding of PLHIV ageing in regional Queensland has important implications for aged care policy and service planning.

**Methods:** 69 PLHIV from regional Queensland were recruited via partner organizations. Accounts of lived experience were elicited via a 90 minute interview conducted in participants' homes in 2014, with follow-up in 2015. A grounded theory approach was used for data analysis and identification of emerging themes.

**Results:** The recurring themes highlight that for many PLHIV bio-medical advances mean that HIV clinical management becomes "the least of ... problems". However, considerable uncertainties remain about the social determinants of health (housing, income, inclusion etc) over time and in locations risky for revealing HIV status. Despite sustained self-care, anxiety and depression are common among long-term survivors. Anxiety about ageing and co-morbidities takes the form of making the most of the present by 'not thinking about the future'. Those living in precarious circumstances have crafted a range of strategies (home as haven, volunteering, reducing to essentials etc) for maintaining mental health and wellness.

**Conclusion:** Early experiences of facing death and depletion of social networks, then adjusting to living with HIV as a chronic and stigmatized condition, left profound impacts on long-term survivors' attitudes towards ageing and disability. There is an urgent need to have a better understanding of and to learn from the experiences and creativity of this cohort of PLHIV on ageing with HIV.

**Disclosure of Interest Statement:** The Living Positive in Queensland Study is funded by the Australia Research Council as a Linkage Grant LP110200318. Queensland Positive People, Queensland AIDS Council, and Positive Directions - Anglicare (now closed) were the original partner organizations of the study.

## ANTIRETROVIRAL TREATMENT (ART) OUTCOMES FOR PEDIATRIC HIV-INFECTED PATIENTS IN VIETNAM (2006–2010)

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**Background:** Pediatric HIV care and treatment programs in Vietnam began in 2005. We describe the outcomes among children who initiated antiretroviral therapy (ART).

**Method:** We abstracted demographic, clinical, and laboratory data from charts of all children who initiated ART during 2005-2010, ≥6 months prior to chart abstraction, at pediatric HIV outpatient clinics that had been established for ≥1 year. Retention in care was defined as receiving ART at a visit within 90 days.

**Results:** We abstracted data from 2240 children at 20 clinics. At ART initiation (baseline), mean age was 4.4 (0-1 year: 16%; 1-3 years: 24.6%; 3-5 years: 25.4%; ≥5 years: 34%); mean CD4% was 11.9%; mean weight-for-age Z-score was -2.18; mean weight-for-height Z-score was -0.91; and 43% were at World Health Organization clinical stages 3 or 4. Six months after ART initiation, 1,985 (88.6%; 95%CI: 84.5-92.7) were retained in care, 165 (7.4%; 95%CI: 5.0-9.8) had died; and 90 (4.0%) had transferred or were lost to follow-up. Of 1,982 children who had initiated ART >12 months before chart abstraction, 1,690 (85.3%; 95%CI: 81.2-89.4) were retained at 12 months, and 147 (7.4%; 95%CI: 5.8-9.0) had died. Children retained in care had a mean CD4% gain of 9.6% (95%CI: 8.79-10.33) after 6 months and 12.7% (95%CI: 11.29-14.11) after 12 months of ART. Mean weight-for-age Z-score was -0.83 (95%CI: [-1.06]-[-0.59]) after 6 months and -0.03 (95%CI: [-0.38]-[0.32]) after 12 months; mean weight-for-height Z-score after 6 months was -0.19 (95%CI: [-0.51]-[0.13]) and -0.04 (95%CI: [-0.39]-[0.32]) after 12 months.

**Conclusion:** Over half of HIV-infected children in Vietnam started ART when aged ≥3 years, and nearly half had opportunistic infections. Earlier diagnosis and ART initiation should be prioritized. Both weight-for-age and weight-for-height Z-scores and immunologic status improved with treatment. High retention may be a proxy for good adherence and may explain the good treatment outcomes.

**Disclosure of interest:** The study is funded by PEPFAR. No pharmaceutical grants were received in the development of this study

## TRENDS IN CD4 CELL COUNT AND HIV VIRAL LOAD SUPPRESSION IN ASIAN ADOLESCENTS

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**Introduction:** Previous data have shown that immune recovery and virologic suppression outcomes may be poorer in adolescents. We examined long-term trends in CD4 and viral load before and during adolescence in the TREAT Asia Pediatric HIV Observational Database (TApHOD), a member cohort of IeDEA.

**Methods:** Patients acquired infection either perinatally or during early childhood, aged <15 years at the start of cART ( $\geq 3$  antiretrovirals), started cART after January 2003 and had  $\geq 3$  CD4 and viral load assessments during follow-up. The follow-up/analysis period started from age 5 after being on cART for  $\geq 1$  year (baseline) up to age 19 years. We used repeated measures mixed models to examine the association between independent variables and CD4 and viral load response on cART. Data up to March 2014 were analysed.

**Results:** A total of 2930 children were included in the CD4 analysis and followed for a median of 5.1 years. Median CD4 count significantly decreased from 909 cells/mm<sup>3</sup> for ages 5-9, to 744 for ages 10-14, and 592 for ages 15-19 in females. For males, this decrease was from 867 cells/mm to 722 and then 611. The declining trend in CD4 was significant during late adolescence (15-19 years) in both males ( $p=0.02$ ) and females ( $p < 0.001$ ) after adjusting for age, CD4, HIV RNA, and treatment interruptions. Among the 1928 adolescents in the HIV RNA analysis, between 73-88% had results  $< 400$  copies/mL. Regression models found that females 15-19 years had lower rates of viral suppression (OR 0.78) than females 10-14 years. Fifty-seven (1.9%) patients died. Mortality was highest during ages 15-19 years.

**Conclusion:** Children and adolescents in our cohort had consistent virological suppression and CD4 changes that may be due to age-appropriate declines. However, despite the overall treatment success, mortality was highest during ages 15-19 years, emphasizing the vulnerability of some older adolescents.

**Disclosure of Interest Statement:** The TREAT Asia Pediatric HIV Observational Database is an initiative of TREAT Asia, a program of amfAR, The Foundation for AIDS Research, with support from the U.S. National Institutes of Health's National Institute of Allergy and Infectious Diseases, Eunice Kennedy Shriver National Institute of Child Health and Human Development, and National Cancer Institute as part of the International Epidemiologic Databases to Evaluate AIDS (IeDEA; U01AI069907), and the AIDS Life Association. TREAT Asia is also supported by ViiV Healthcare. The Kirby Institute is funded by the Australian Government Department of Health and Ageing, and is affiliated with the Faculty of Medicine, UNSW Australia.

## **ANTI-RETROVIRAL TREATMENT: CHANGING ATTITUDES AMONG PLHIV FROM 1997 TO 2012**

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**Introduction:** The provision of anti-retroviral treatment (ART) is central to both the care of people living with HIV (PLHIV) and efforts to reduce the rate of HIV transmission. However, current estimates suggest that up to 40% of PLHIV in Australia are not using ART. In this paper, factors associated with Australian PLHIV's use of and attitudes toward ART are examined in two cohorts: 1997 and 2012.

**Methods:** The HIV Futures study is a national, cross-sectional survey of PLHIV conducted every two-three years since 1997. The most recent survey (HIV Futures 7) was conducted in 2012. The surveys were widely advertised through relevant mailing lists and media, including online networks in 2012. Descriptive analysis and comparison of means were used to explore attitudes among PLHIV toward ART. There were 925 responses from PLHIV in 1997 and 1058 in 2012.

**Results:** A greater number of PLHIV in the 2012 cohort were on ART (78% in 1997; 88% in 2012) and reported an undetectable viral load at their most recent test (46% in 1997; 78% in 2012). Older age, lower CD4 count and greater length of time since diagnosis were associated with ART use in both cohorts. Among respondents not using ART, the 2012 cohort reported less concern about harms and greater confidence in the long-term efficacy of ART. However, in both cohorts over 70% of people not using ART agreed with the statement 'I am healthy now and do not need ART'.

**Conclusion:** ART use in the 2012 cohort was close to the national target of 90%. However, among non-ART users, belief in the need to delay treatment still appeared to be strong. Information about the characteristics and beliefs of non-ART users will be of interest to clinicians, educators and policy makers.

**Disclosure of Interest Statement:** The HIV Futures Study was funded by the Australian Department of Health as part of a range of Australian Government funded HIV social research programs conducted at the Australian Research Centre in Sex, Health and Society, La Trobe University.

## NOT SO HARD TO SWALLOW? EARLY ADHERENCE TO PrEP BY THE FIRST 50 PARTICIPANTS IN THE VicPrEP STUDY

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**Introduction:** Pre-exposure prophylaxis (PrEP) decreases risk of HIV acquisition however its efficacy is closely dependent on adherence. We report on adherence to daily tenofovir-emtricitabine (Truvada) for PrEP in the first 50 participants of VicPrEP – Australia’s first PrEP demonstration study.

**Methods:** Participants were recruited from three general practice clinics and one sexual health clinic in Melbourne. Participants consented to taking daily Truvada for one year. Participants were encouraged to fill prescriptions early to avoid inadvertent Truvada cessation. At month 3 we assessed adherence using: self-report obtained at clinic visits (<50%, 50-90% and > 90% adherence): confidential online surveys (number of pills missed in the last 90 days) and refill-based assessment (% days drug available) in the first 50 VicPrEP participants completing their baseline & 3 month evaluations. Dried blood spot (DBS) Truvada levels are pending.

**Results:** All participants reported high PrEP adherence. All but one participant reported >90% adherence in the clinic, and the median reported missed doses over the last 90 days was 1.0 (IQR 0.0-2.0, max 8.0). Most participants (45/50) had drug available for all days between study visits (median 115%, IQR 106-117%). Participants who had study drug available for ≥100% versus <100% of days were likelier to have a higher median number of sexual partners between baseline and the month 3 study visit (10 and 2 partners, respectively), p=0.03.

**Conclusion:** Self-reported adherence was high, and most participants had drug available for all days between study visits. Participants who did return for the month 3 visit before running out of pills were likelier to have a higher number of sexual partners, suggesting that high partner number is associated with better adherence. Analysis of DBS results will be important to explore the reliability of both self-report and refill-based assessment in this study population.

**Disclosure of Interest Statement:** The VicPrEP study was funded by the Victorian Department of Health and study drug was supplied by Gilead.

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Luxi Lal has no interests to disclose.

Jennifer Audsley has no interests to disclose.

In the last two years Norman Roth has received honoraria for Advisory Boards and/or educational events from ViiV, MSD, Gilead and Bristol Myers Squibb.

Ban Kiem Tee has no interests to disclose.

## **BUILDING MOMENTUM FOR ACTION ON HIV AND MOBILITY**

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**Introduction:** HIV diagnoses in Australia have been increasing amongst people migrating from regions of high HIV prevalence including sub-Saharan Africa and South East Asia. In addition, notifications have increased amongst people born in Australia who reside in or travel to or from high HIV prevalence countries.

**Methods:** The HIV and Mobility in Australia: Road Map for Action report was the first attempt to capture what we know about HIV and mobility in migrant and mobile populations in Australia. It proposed five areas of action to operationalise the recommendations of the 7th National HIV Strategy for people from high prevalence countries and their partners as well as travellers and mobile workers. We report on progress and plans since the launch of the report.

**Results:** A Community of Practice for Action on HIV and Mobility (CoPAHM) was established to keep HIV and mobility issues on the national agenda. Members include a cross-sector alliance of key stakeholders from government organisations, non-government organisations, research institutions, community groups, and peak bodies. A coordinated, national and strategic response is now required to realise the full benefit of current investments in this area. Barriers and enablers for effective action and the feasibility, urgency and comprehensiveness of proposed actions in the Road Map are currently being assessed in all jurisdictions.

**Conclusion:** Existing prevention initiatives for mobile populations do exist but are not well coordinated, often ad hoc or pilot in nature and structural barriers to accessing testing, treatment and care (e.g. Medicare ineligibility for some migrant groups) undermine our efforts to end HIV by 2020. We are now in a position to build on what we have learned from the broader Australian HIV response: a partnership approach, a sustained long-term strategy and investment, commitment at state, territory and Commonwealth levels, and supported community mobilisation.

**Disclosure of Interest Statement:** The authors have no competing interests to disclose. This collaborative work has received funding from the Commonwealth Department of Health and Western Australian Department of Health

## RESEARCH, REFORM AND REINVIGORATION: NSW POLICY TARGETS AND SECTOR MOBILISATION

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**Introduction:** Setting targets is one way jurisdictions prioritise what matters within health systems. Increasing costs means there is pressure on health organisations to be more efficient, effective and accountable.

Based on the emerging and strengthening research evidence the NSW Government launched a bold new strategy to embody the new evidence and reinvigorate the response to HIV in NSW to virtually eliminate HIV transmission by 2020.

Five years out, those targets are looming larger in the consciousness of HIV policy makers, advocates, community educators and health workers.

**Methods:** Drawing on experience in NSW following the release of the NSW HIV Strategy, it is reasonable to attribute some of the encouraging results to the setting of these targets and a re-invigorated response to HIV across the sector.

In the context of a no growth HIV budget, this bold strategic direction, coupled with strong performance targets, more regular data collection and reporting, and public accountability has raised the profile and given priority to HIV.

**Results:** Results achieved since the release of the Strategy in late 2012 are very encouraging. For instance, the 2014 NSW HIV notification data shows a 19% increase in occasions of testing among gay men. However, setting targets and mobilizing existing resources can only achieve so much. Widespread access to PrEP, self-testing kits and widespread rapid testing is essential.

This situation effectively means that those working to achieve the promise indicated by research, and backed by Government strategy, are being held accountable for outcomes for which we only have half the tools.

**Conclusion:** While the achievements in NSW over the past two years provide cause for optimism, there are concerns that the counterproductive effect of the slow and expensive regulatory environment will circumvent public health, jurisdictional leadership and individual capacity. Critically, without community mobilisation no change will occur, regardless of how bold the target.

## **ASHM INTERNATIONAL PROGRAM: PROVIDING SUPPORT TO IMPROVE ACCESS TO HIV CARE AND MANAGEMENT FOR PRISONERS IN INDONESIA**

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**Background:** Prisons and detention centres are considered high risk environments for the transmission of HIV. The estimated HIV prevalence in Indonesian prisons was 24 times higher than that estimated for the adult general population (Directorate of Corrections Ministry of Justice and Human Rights 2010). Lower rates of treatment acceptance and compliance, higher lost-to-follow up numbers after release, lack of referral or ongoing support further compromise HIV care and treatment.

In 2009, ASHM's International Program commenced its partnership project with Salemba prison clinic in Jakarta to support the scale up of treatment and care for inmates with HIV and related conditions.

**Methods:** Key strategies included the provision of HIV education, prevention, and treatment services to inmates prior to and following release. The main interventions included:

- Capacity building for clinic staff on counselling, testing and care and treatment for HIV and related conditions
- Establishing peer counselling and group support for inmates
- Providing referral support and risk reduction services following release
- Strengthening prison's partnerships with local NGO to coordinate care and support upon release into the community

In 2015, an independent evaluation was commissioned to examine the outputs and outcomes of the program.

**Results:** The key outcomes included a 200% increase in HIV and TB mass screening rates, from 855 prisoners screened in 2011-2012 to 1,596 prisoners in 2013-2014. The number of prisoners initiating ART increased from 29% in 2011-2012 to 65% in 2013-2014. The majority of prisoners (84.5%) received medical referral and support services following release compared to almost none in 2011-2012.

**Conclusions :** Indonesian prison authorities have recognised the value of this project by promoting the same processes into its national system. The Salemba HIV program has since been implemented in Pemuda prison in South Jakarta. This project demonstrates that a small scale investment and support, with the right momentum and approach can provide valuable outcomes.

**Disclosure of Interest Statement:** Nothing to Declare

# TENSIONS BETWEEN THE FIJIAN HEALTHCARE WORKERS: A CHALLENGE TO THE PREVENTION OF MOTHER-TO-CHILD TRANSMISSION (PMTCT) OF HIV SERVICES IN SUVA, FIJI –A QUALITATIVE STUDY

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**Introduction:** Prevention of mother-to-child transmission (PMTCT) of human immunodeficiency virus (HIV) remains problematic for many developing countries. Research indicates lack of role clarification and misunderstanding among healthcare providers was considered as a barrier to effective provision of PMTCT services. It impeded healthcare workers abilities to deliver optimal PMTCT services to pregnant women. This study explored the tension between the hospital PMTCT healthcare workers and HIV counsellors while providing HIV testing and counselling to antenatal women in Suva Fiji.

**Methods:** Data were collected via individual, in-depth, interviews held in a single hospital and an associated reproductive health centre in Suva in May 2013. A total of 17 healthcare providers including doctors (n=4), midwives (n=5), nurses (n= 3), laboratory technicians (n=2) and HIV counsellors (n=3) were interviewed. The selection of respondents was based on their involvement with the provision PMTCT services. The data were analysed using thematic analysis. Ethics approvals were granted by the University of New South Wales Human Research Ethics Committee and Fiji National Research Ethics Committee.

**Results:** We found that there were tensions between the government-employed hospital PMTCT staff and external private contracted HIV counselling providers, which could restrict healthcare workers abilities to provide quality PMTCT services. The lack of clarity of common goals and misunderstandings between both groups was identified. The hospital PMTCT staff felt external HIV counsellors lacked knowledge of PMTCT and HIV counsellors identified lack of referrals and cooperation to their service by antenatal hospital staff.

**Conclusion:** Cultural tension between the hospital staff and external counselling appears to be the main challenge to effective provision of PMTCT services in the hospital. Ongoing tension between the healthcare workers may jeopardise the quality of PMTCT services. These findings suggest that cultural tension between two groups could be resolved by improving communication.

## **Disclosure of Interest Statement:**

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**Keywords:** PMTCT; tension between healthcare workers; Suva; HIV; health system challenges